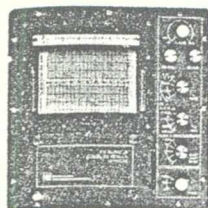


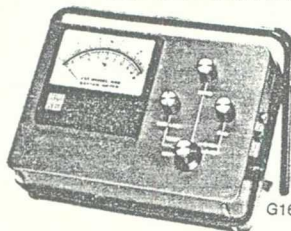


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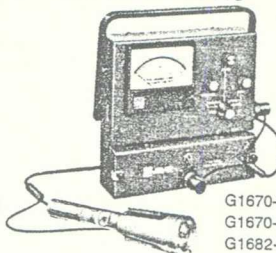
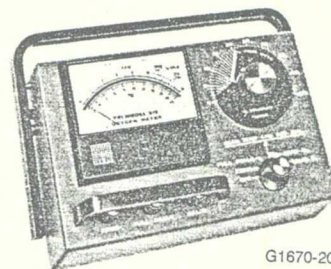
## YSI OXYGEN METERS AND MONITORS



G1660-1



G1670-10

G1670-11  
G1670-10  
G1682-11

G1670-20

**G1660-1**

**MONITOR, Dissolved Oxygen, Continuous, Model 56, YSI**—For on-site oxygen and temperature monitoring for pollution discharge studies, fisheries, hatcheries, lake profiling, stream quality studies, etc. Self-contained, portable unit has 2-channel, 4-speed recorder that uses thermal chart paper and a convenient inkless pen. Paper is 100mm wide (4") and 24 meters long with a 100-division linear scale for accurate readings. Unit response time is adjustable from 1 to 18 minutes with ranges of 0-5, 0-10, 0-20 ppm or 0-100% air saturation or 0-100% oxygen saturation. Measures temperatures from  $-5^{\circ}\text{C}$  to  $+45^{\circ}\text{C}$  and has operation and storage temperature range from  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ . Signal output can be used to operate external recorders, meters, alarms or other 0-100 mv devices. Built-in battery pack provides a minimum of 10 days continuous operation per charge; can be continuously line-current operated using the battery charger. A low voltage cutoff protects against inaccurate reading when batteries are low. Watertight case houses power supply, cable and recorder and permits operation regardless of weather conditions. Reusable desiccant capsule in lid protects against condensation damage in the case. Detachable storage reel holds oxygen probe and submersible stirrer with up to 250' of cable. Supplied without oxygen probe, cable assemblies or submersible stirrer. Complete with G1660-11 Oxygen Probe Holder, one roll of G1660-12 Chart Paper, G1660-13 Probe Service Kit, G1660-14 Battery Pack and G1660-15 Charger. Charger operates on 115V, 60 Hz. Dimensions:  $13" \times 13" \times 16"$  ( $30.5 \times 30.5 \times 40\text{cm}$ ). Weight 31.5 lbs. (15kg).

Order **G1660-1—Monitor** . . . . . Each **\$3400.00**

**ACCESSORIES AND REPLACEMENTS  
FOR USE WITH G1660-1 DISSOLVED OXYGEN MONITOR**

**G1660-11**

**OXYGEN PROBE HOLDER (YSI 5601)**—Replacement for G1660-1 Monitor. Attaches to cable reel for convenient probe storage.

Order **G1660-11—Holder** . . . . . Each **\$12.00**

**G1660-12**

**CHART PAPER (YSI 5602)**—Replacement for G1660-1 Monitor. 1 roll, 24 meters long.

Order **G1660-12—Paper** . . . . . Each **\$13.00**

**G1660-13**

**PROBE SERVICE KIT (YSI 5675)**—Replacement for G1660-1 Monitor. Includes 30 probe membranes, 1 x 1 oz. bottle KCl crystals and probe contour tool.

Order **G1660-13—Service Kit** . . . . . Each **\$15.00**

**G1660-14**

**BATTERY PACK (YSI 5603)**—Replacement for G1660-1 Monitor.

Order **G1660-14—Battery Pack** . . . . . Each **\$220.00**

**G1660-15**

**BATTERY CHARGER (YSI 5604)**—Replacement for G1660-1 Monitor. Operates on 115V, 60 Hz.

Order **G1660-15—Charger** . . . . . Each **\$110.00**

**G1660-16**

**SUBMERSIBLE STIRRER (YSI 5695)**—Accessory for G1660-1 Monitor. Assures optimum (1 ft./sec.) water flow rate. Supplied with 50' stirrer-probe cable, but without G1671-6 Probe.

Order **G1660-16—Stirrer** . . . . . Each **\$420.00**

**G1670-10**

**OXYGEN METER, Model 54APB, YSI**—For laboratory or field measurement of dissolved oxygen in ppm and  $^{\circ}\text{C}$ ; meter can be calibrated against air or other standard. Dissolved oxygen is measured directly in 0-10 ppm or 0-20 ppm range with  $\pm 1\%$  full scale accuracy at calibration temperature; readability is 0.05 ppm and 0.1 ppm respectively. Temperature range is  $-5^{\circ}$  to  $+45^{\circ}\text{C}$  with 0.25 $^{\circ}\text{C}$  readability; accuracy is  $\pm 0.6^{\circ}\text{C}$ . Meter fea-

tures automatic temperature compensation accurate to  $\pm 1\%$  of D.O. reading made within  $\pm 5^{\circ}\text{C}$  of calibration temperature or  $\pm 3\%$  of reading from  $-2^{\circ}$  to  $+45^{\circ}\text{C}$ . Output terminals are provided for recording data. Complete with ABS plastic housing and 4 x 1.35V mercury batteries with approximate 1000-hour life; without probe. Dimensions:  $8\frac{1}{2}" \times 11" \times 3\frac{3}{4}"$ . Weight 5 $\frac{1}{2}$  lbs.

Order **G1670-10—Model 54APB** . . . . . Each **\$588.00**

**G1670-11**

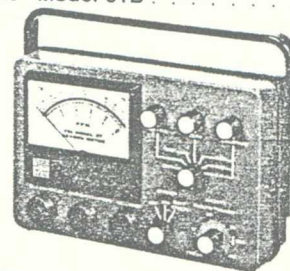
**OXYGEN METER, Model 54ARC, YSI**—Similar to G1670-10 Oxygen Meter, but with built-in charger and 4 x 1.25V nickel-cadmium rechargeable batteries providing 100 hours of operation between charges. Meter can be operated on line power without damage to unit or batteries. For operation on 117VAC, 50/60 Hz. CSA certified.

Order **G1670-11—Model 54ARC** . . . . . Each **\$640.00**

**G1670-20**

**OXYGEN METER, Model 51B, YSI**—For use in fresh and sea water at a variety of altitudes; meter measures dissolved oxygen from 0-15 ppm and temperature from  $-5^{\circ}$  to  $+45^{\circ}\text{C}$  as well as % oxygen and % air saturation. Fresh-to-sea-water dial corrects for salinity; direct dial compensates for atmospheric pressure at altitudes from 0-11,000 feet. Temperature compensation is automatic for membrane coefficient and manual by direct dial for oxygen solubility from 0-45 $^{\circ}\text{C}$  in fresh water and  $-5^{\circ}$  to  $+37^{\circ}\text{C}$  in sea water. Accuracy of oxygen measurement is  $\pm 0.2$  ppm or better at calibration temperature; readability is 0.1 ppm. Temperature measurements are accurate to  $\pm 0.6^{\circ}\text{C}$  with 0.25 $^{\circ}\text{C}$  readability. Complete with ABS plastic housing and 4 disposable "C" size carbon zinc batteries providing 1000 hours of operation; without probe. Dimensions:  $8\frac{1}{2}" \times 11" \times 3\frac{3}{4}"$ . Weight 3 lbs.

Order **G1670-20—Model 51B** . . . . . Each **\$483.00**



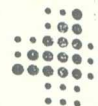
G1670-30

**G1670-30**

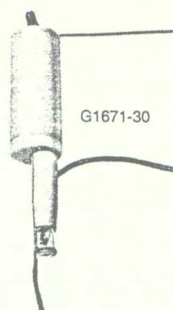
**OXYGEN METER, Model 57, YSI**—Portable, battery-operated meter for measuring dissolved oxygen has shock resistant, watertight construction; meter will float if accidentally dropped overboard. Direct reading ranges of 0-5 ppm, 0-10 ppm and 0-20 ppm have respective readabilities of 0.025, 0.05 and 0.1 ppm; accuracy is  $\pm 1\%$  full scale at calibration temperature or  $\pm 0.1$  ppm, whichever is greater. Temperature range of  $-5^{\circ}$  to  $+45^{\circ}\text{C}$  is readable to 0.25 $^{\circ}\text{C}$  with  $\pm 0.6^{\circ}\text{C}$  accuracy. Membrane coefficient and change in water temperature are compensated for automatically; accuracy is  $\pm 1\%$  of D.O. readings within  $\pm 5^{\circ}\text{C}$  of calibration temperature and  $\pm 3\%$  of readings from  $-5^{\circ}$  to  $+45^{\circ}\text{C}$ . Corrections for ocean salinity are made by dialing the salinity concentration, 0-40 ppt. Recorder output is provided for data recording. Complete with ABS plastic housing and 2 disposable "C" size carbon zinc batteries with approximate 1000-hour life; without probe. Dimensions:  $8\frac{1}{2}" \times 11" \times 3\frac{3}{4}"$ . Weight 3 lbs.

Order **G1670-30—Model 57** . . . . . Each **\$739.00**

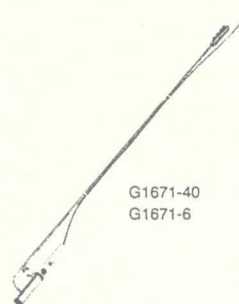




G1671-6  
G1682-11



G1671-30



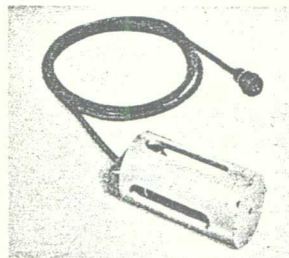
G1671-40  
G1671-6

**G1670-40 OXYGEN METER, Dissolved, Model 58, YSI**—Designed for laboratory and field use. Instrument measures dissolved oxygen with two resolutions including 0 to 20.0 and 0 to 20.00mg/l, and is accurate to  $\pm 0.03$ mg/l. Temperature range is  $-5^{\circ}$  to  $+45^{\circ}\text{C}$ . Unit also measures % air saturation in gases as well as in many other liquids. In the mg/l range the instrument automatically compensates for membrane coefficient and for changes in oxygen solubility caused by variation in water temperature. The % saturation range is also automatically compensated for membrane coefficient. Other features include easy-to-read LCD display, direct-dial salinity compensation, shock and water resistant gasketed ABS case and recorder output. For field use, meter is powered by four disposable batteries. An additional four batteries can be inserted to power a submersible stirrer. Low battery indication is provided for both sets of batteries. In the lab, meter operates on 115V.  
Order **G1670-40—Model 58**. . . . . Each **\$925.00**

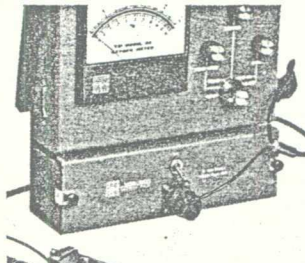
ACCESSORIES FOR YSI OXYGEN METERS

**G1671-6 PROBE, Dissolved Oxygen (YSI 5739)**—Field probe for measurement of dissolved oxygen features screw-apart construction, allowing change of cable length or replacement of components without replacing entire assembly. Other features include pressure compensation, temperature compensation, built-in weight, polarographic membrane-covered oxygen sensor, protective sensor guard and durable molded plastic construction. Complete with G1671-43 Membrane and KCl Kit. Required for use with G1660-1 Monitor. Can be used with G1660-16 Submersible Stirrer or used alone. When used without submersible stirrer, a G1671-12, -13 or -14 Cable is required. Supplied without cable.  
Order **G1671-6—Probe**. . . . . Each **\$157.00**

**G1671-50 BATTERY AND CHARGER PACK (YSI 5721)**—For use with G1682-10 or G1682-11 Stirrer when used with G1670-30 Oxygen Meter; internal rechargeable battery power supply is especially useful in field work.  
Order **G1671-50—Battery Pack**. . . . . Each **\$92.00**



G1682-10



G1682-20  
with meter and probe

**G1682-10 STIRRER, Submersible (YSI 5791A)**—For use with G1671-6 Probe and G1671-14 Cable; with 50-foot lead.  
Order **G1682-10—Stirrer**. . . . . Each **\$255.00**

**G1682-11 STIRRER, Submersible (YSI 5795A)**—For use with G1671-6 Dissolved Oxygen Probe; stirrer features single cable for both stirrer and probe. Requires 6V DC from G1682-20 Battery Pack or directly from stirrer/charger connections on G1670-30 Model 57 Meter; with 50' cable.  
Order **G1682-11—Stirrer**. . . . . Each **\$355.00**

**G1682-20 BATTERY PACK, 6-Volt (YSI 5492A)**—For use with G1682-10 or G1682-11 Stirrers when used with G1670-10, -11 or -20 Oxygen Meters.  
Order **G1682-20—Battery Pack**. . . . . Each **\$98.00**

**CABLE, YSI**—For use with G1671-6 Probe; cable is detachable. G1671-14 Cable includes storage reel.

Order Cable	Mfr. No.	Lgth, ft	Each
<b>G1671-12</b>	5740-10	10	<b>\$80.00</b>
<b>G1671-13</b>	5740-25	25	<b>98.00</b>
<b>G1671-14</b>	5740-50	50	<b>112.00</b>

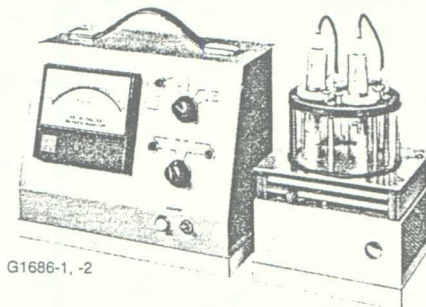
**PROBE, B.O.D. Bottle, YSI**—For measurement of dissolved oxygen and temperature in the laboratory; probes fit neck of standard B.O.D. bottle or any container with 0.675" diameter opening. G1671-30 Probe has built-in 117VAC, 50/60 Hz stirring motor; stirring must be accomplished manually or with magnetic stirrer for G1671-31 Probe. Complete with G1671-43 Membrane and KCl Kit. G1671-30 Probe is CSA certified.

Order Probe	Mfr. No.	Description	Each
<b>G1671-30</b>	5720	Self-stirring	<b>\$353.00</b>
<b>G1671-31</b>	5750	Nonstirring	<b>190.00</b>

**G1671-40 CHAMBER, Field Calibration (YSI 5075)**—For use with G1671-6 Probe to make air calibration easier and more accurate; chamber brings probe to temperature of water to be measured in a high humidity air environment at atmospheric pressure. Chamber may also be used for holding probe and stirring sample. Overall length: 4 feet.  
Order **G1671-40—Chamber**. . . . . Each **\$99.00**

**MEMBRANE AND KCl KIT, YSI**—Kits consist of 30 membranes each plus 1 oz. dropper bottle of KCl crystals for mixing with distilled water. G1671-43 Kit contains standard membranes for normal dissolved oxygen measurements; G1671-44 Kit contains high sensitivity membranes for measurements at low temperatures and/or low dissolved oxygen levels.

Order Kit	Mfr. No.	Description	Each
<b>G1671-43</b>	5775	Standard	<b>\$8.50</b>
<b>G1671-44</b>	5776	High sensitivity	<b>8.50</b>



G1686-1, -2

**BIOLOGICAL OXYGEN MONITOR, Model 53, YSI**—Modular system for determination of  $p\text{O}_2$  in various biological liquids; unit provides a signal for plotting oxygen uptake or evolution curves directly on any 100 mv recorder. Technic centers on Clark-type polarographic electrode, operating in an atmospherically controlled, compact environment; sensor produces current output proportional to  $p\text{O}_2$ , which, for a given solution, at a specific temperature, can be directly related to oxygen concentration. Most determinations require from 2 to 15 minutes; results are obtained much faster than with standard manometric technics. Methodology requires small sample size for completion; for example, one rat hypothalamus will provide material sufficient for many experiments. Testing temperature uniformity must be  $\pm 0.02^{\circ}\text{C}$ ; stirrer is built-in. System consists of G1686-1 Amplifier, G1686-2 Bath-Stirrer Assembly with 2 Lucite plungers, 2 G1686-4 Probe Assemblies and W3220-5 Constant Temperature Water Circulator; all components are necessary for completion of system.

COMP

**G1686 AMPLIFIER**, me  
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760mm  
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**G1686 BATH**  
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**G1686 O<sub>2</sub> PR**  
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**W3220 CIRCU**  
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**G1686 CHAM**  
Bath A  
O-ring  
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**G1686 BATH**  
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**G1686 OXY**  
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cases



## COMPONENTS OF BIOLOGICAL OXYGEN MONITORING SYSTEM

## G1686-1

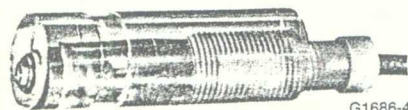
**AMPLIFIER** (YSI 53)—Provides polarizing voltage, probe selection, meter readout and 100 mv recorder output. For operation in 2 ranges: full scale for air at 760mm, and full scale for O<sub>2</sub> at 760mm. CSA certified.

Order **G1686-1—Amplifier** . . . . . Each **\$879.00**

## G1686-2

**BATH ASSEMBLY** (YSI 5301)—Offers better than  $\pm 0.01^\circ\text{C}$  temperature stability at chamber. Also provides stirring for all 4 chambers.

Order **G1686-2—Bath** . . . . . Each **\$985.00**



G1686-4

## G1686-4

**O<sub>2</sub> PROBE** (YSI 5331)—Clark polarographic-type sensor. O<sub>2</sub> consumption  $10^{-7}$  grams O<sub>2</sub>/hr. in air saturated solutions. Design permits sealing O-ring, easy bubble removal, insertion of test materials or inhibitors and operation in gases other than air, if desired. 2 required per instrument.

Order **G1686-4—Probe** . . . . . Each **\$154.00**

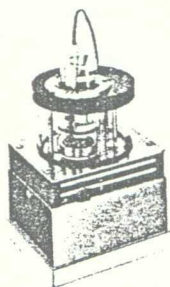
## W3220-5

**CIRCULATOR**, Constant Temperature, Haake—See listing in Water Bath section.

## G1686-7

**CHAMBER PACK** (YSI 5215)—Replacement kit for G1686-2 Bath Assembly. Contains 6 precision bore chambers and 12 O-rings.

Order **G1686-7—Chamber Pack** . . . . . Each **\$65.00**



G1686-10

## G1686-10

**BATH ASSEMBLY**, Macro, Model 5302, YSI—Accessory for G1686-1 Amplifier; for use with substrate volumes of 20 to 50ml in studies of oxygen uptake or evolution by small aquatic plants,

animals or large tissue sections. Complete with Lucite plunger, sample chamber and sealing O-rings; incorporates built-in magnetic stirring and provision for maintaining constant bath temperature when used in conjunction with a circulator capable of controlling temperature to an accuracy of  $\pm 0.02^\circ\text{C}$ . Lucite plunger can be drilled for insertion of other sensors into chamber for additional sample data. For operation on 115V, 60 Hz. CSA certified.

Order **G1686-10—Macro Bath** . . . . . Each **\$776.00**



G1688-1, -2

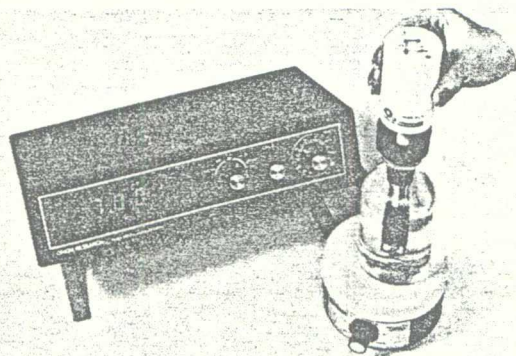
**DISSOLVED OXYGEN METER, B.O.D., Wheaton**—For determining dissolved oxygen concentrations in liquid waste samples in less than one minute to accuracies comparable to the Winkler method or others employing electrodes; does not require changing of membrane, electrolyte or stirring of sample. Measurement methodology approved by EPA for determining B.O.D.<sub>5</sub> and D.O. for the National Pollutant Discharger Eliminator System. Unit comes complete with probe, cable, AC line cord and operating instructions including temperature/altitude calibration table.

Order Meter	Mfr. No.	Electrical requirements	Each
<b>G1688-1</b>	227800	95/135VAC, 60 Hz	<b>\$898.00</b>
<b>G1688-2</b>	227802	190/270VAC, 50 Hz	<b>898.00</b>

ACCESSORIES FOR USE WITH G1688-1 and -2  
DISSOLVED OXYGEN METER

Order	Mfr. No.	Description	Each
<b>G1688-11</b>	227805	Probe with 1-2 meter cable & jack	<b>\$329.00</b>
<b>G1688-12</b>	227806	Glass probe storage tube with plastic base	<b>5.25</b>
<b>G1688-13</b>	227808	2 oz. conditioning fluid in plastic bottle	<b>2.30</b>

## ORION OXYGEN ELECTRODE



G1690-1 with meter

## G1690-1

**OXYGEN ELECTRODE**, Model 9708, Orion—For measurement of oxygen saturation using any pH meter for readout, in most cases in less than 30 seconds. Air calibrated electrode has

concentration range of 0-14 ppm with accuracy of  $\pm 0.05$  ppm or 2% of reading and an operating temperature range from 0 to  $45^\circ\text{C}$ . The accessory overflow funnel simplifies oxygen measurement and incorporates a captive magnetic stirring bar for sample agitation. Complete with 2 batteries, 2 membrane electrolyte modules, overflow funnel with built-in stirring bar and 1m long cable terminated in standard U.S. plugs for connection to meter. For operation on two silver oxide watch-type batteries. Can provide operation for one year based on 4 hours-per-day use.

Order **G1690-1—Electrode** . . . . . Each **\$495.00**

## REPLACEMENTS FOR G1690-1 OXYGEN ELECTRODE

## G1690-2

**MEMBRANE/ELECTROLYTE MODULE** (Orion 970801)—For use with G1690-1 Oxygen Electrode.

Order **G1690-2—Module** . . . . . Each **\$25.00**

## G1690-3

**OVERFLOW FUNNEL**, With Stirring Bar (Orion 970802)—For use with G1690-1 Oxygen Electrode.

Order **G1690-3—Funnel** . . . . . Each **\$42.00**

For batteries see B2606.